

PIPE DREAMS: THE SHORTCOMINGS OF IDEOLOGICALLY BASED PLANNING

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The planning authorities in Sydney have justified their emphasis on urban consolidation in large part because of the alleged benefits in relieving congestion. A review of the experience in metropolises overseas indicates that this is a pipedream. Urban consolidation in Sydney will add to congestion because there is no consequent link with greater public transport use.

INTRODUCTION

Visitors to Australia comment on the beauty and relative spaciousness of our cities. On an increasingly overcrowded planet adequate space is becoming a rare commodity. Space is a major contributor to living standards in the urban areas of Australia, considered among the best in the world. But these living standards are now being threatened by new and increasingly widely accepted planning doctrines based on higher population densities.

Proponents of these planning doctrines assert that land for urban development is in short supply. They maintain that higher densities will solve problems associated with traffic congestion, the cost of and choice of housing, sustainability and social networks. Birrell et al. outline the advance of these 'new-urban' or 'smart-growth' doctrines in Australia.¹

Australian State Government departments are in the process of implementing high-density policies but have provided no evidence that they will ameliorate the problems alleged. It has not been demonstrated that high-density policies are the optimum direction to take. For example it is not at all evident that that they will improve traffic congestion, the cost of and choice of housing, sustainability or social networks

The new urban and smart-growth movements show characteristics of an

ideology. They substitute emotive jargon for accepted good English, illustrative of techniques described by Orwell.² The words urban 'consolidation' (*make solid; strengthen or combine [territories etc] compactly into one mass*) are substituted for what should properly be termed urban 'densification' (*compacting closely*).³ Compacting closely is the process being described; strengthen or solidify are judgements that should be reserved for when these outcomes are intended. 'Consolidation' is presumably substituted by the high-density advocates to elicit an unjustifiable emotive association with strength and solidity.

Similarly the new urban and smart-growth movements substitute the words urban 'sprawl' (*an awkward or clumsy spreading out of limbs*) for urban 'spread' (*cause to cover larger surface*).⁴ Again, awkward or clumsy are judgements that should be reserved for when these meanings are intended and 'sprawl' is presumably substituted by the high-density advocates to elicit an unfavourable emotive reaction.

TRAFFIC CONGESTION

Affluent urban areas in the world have been built around the capabilities of the automobile. In large cities traffic congestion results. The new urban and smart growth proponents allege that, by introducing high-density in these areas,

public transport can replace the car and solve congestion problems and high energy usage.

VARIABLES AFFECTING CAR USAGE

These high-density advocates make misleading claims about the relationship between density and per capita petrol consumption.⁵ Many multivariate studies show that other factors are more important. For example, a Melbourne study showed that income (that is being able to afford a car) and accessibility to activities are the main predictors of petrol consumption.⁶ Another paper showed that for Australian-type cities a 25 per cent increase in the price of petrol would have the same effect (an approximate 25 per cent decrease in petrol consumption) as increasing population density by over 85 per cent in outer urban areas.⁷ These results demonstrate the sensitivity of car use to economic factors and its relative insensitivity to density. A European Union report illustrates the strong empirical relationship between car ownership and per capita gross domestic product.⁸ Thus any apparent effect of high-density on car use is mainly due to density being a surrogate for other variables that have a more significant influence, such as poverty which is frequently correlated with high-density living. Many other studies have similar findings.⁹

Examples of travel patterns in various cities are indicative of the multiple factors involved. Describing the South American city of Curitiba at a recent seminar in Sydney, a former mayor told of heroic efforts that had been made to reduce car dependence. Dedicated bus transitways with buses carrying up to 270 passengers were built. All high-density buildings have to be situated along these transitways.¹⁰ Public transport usage is 31

per cent of journeys.¹¹ Considering the efforts that have been made to reduce car dependence, together with the effect of the degree of car ownership being restricted by the prevalent poverty, this is a disappointingly low level.

Moscow provides an example of the rapid increase in car use when restricting factors such as poverty and compulsion are removed. In the 1960s planning strategy principles for residential development to be followed in Russia and Eastern Europe were enunciated in a book produced by planners at the University of Moscow.¹² In a manner reminiscent of current new-urbanist or smart-growth advocates, western-style single residential suburbs were criticised as chaotic, monotonous agglomerations covering enormous stretches of land. Public transport oriented high-density mixed-use development was advocated.¹³ During the Stalinist era, when only the privileged could travel by car, streets were relatively empty. In 1980 only two per cent of journeys to work were by car.¹⁴ However it is common knowledge that the downside of that controlled society was that people waited around and queued for long periods of time, productivity was abysmal, poverty was pervasive and the residents lived in extremely overcrowded conditions — 20 to a flat was not uncommon (many still do).

Today's Moscow is still a high-density city. Single residential buildings are almost universally not allowed and the city features one of the world's most extensive public transport systems. The Metro stations are clean and safe, intervals between trains are no more than eight minutes (even late at night) and 62 per cent of public transport commuters are exempted from paying the extraordinarily inexpensive fares. Yet

Moscow now experiences severe traffic congestion with prolonged periods when traffic is at a virtual standstill, 'crazy' as the locals describe it.¹⁵ The average speed of the traffic flow is about 30 km/h in the peripheral districts of the city and no greater than 15 km/h in the centre. In 2003 cars carried 24 per cent of annual passenger transportation and this figure has been increasing at over seven per cent per year.¹⁶

HIGH DENSITY AND TRAFFIC IN AUSTRALIAN CITIES

Many of the reported congestion problems in Melbourne are found in locations where there has been substantial additional housing in recent years. Medium-density housing projects located near commercial or transit centres invariably include one or two parking places per dwelling.¹⁷ A similar situation occurs in Sydney where medium and high-density developments built near railway stations have one or two parking spaces per unit. Recently, developers of a 5.7ha site near Sydney Central Station abandoned their proposed development of the huge multi-unit project mainly because authorities insisted that a maximum of 60 per cent of the units could be allocated parking. This is in spite of the fact that the site could not be in a better location for public transport, being adjacent to the central railway station and major bus routes which radiate out from the locality. Developers recognise that units without parking will not be saleable.¹⁸ The reality is that for most journeys undertaken (such as travelling to work outside the city centre, recreational activities, visiting friends, weighty shopping) public transport, if it is available, is just too inconvenient and time-consuming.

The assertion by high-density advo-

cates that traffic congestion problems are reduced by high-density conflicts with common experience. In Australia, as density increases so does congestion, a trend that is seemingly little affected by the availability of public transport (**Figure 1**). This mirrors what we see in cities all over the world — traffic congestion increasing with density, even in cities with public transport systems that Australian cities cannot hope to match. While it appears that higher population densities do result in a slightly higher percentage of travel being made by public transport, this outcome is completely overwhelmed by the greater number of people living in the area — people who still have to use their cars most of the time. To state the obvious, more cars in a restricted space means more congestion.

EUROPEAN CITIES

Proponents of high-density policies urge that the planning of Australian cities emulate that of European cities, such as Paris, Copenhagen, Stockholm and Vienna. **Table 1** lists, for some international urban areas, the population density, public transport market share, the trend of this share and car kilometers per capita. The reader is referred to the data sources mentioned for more comprehensive listings. It is noticeable that, in the main, parameters relating to public transport and car use in the European cities do not differ markedly from those in Sydney. It is difficult to understand how making Australian cities resemble these European cities would have any worthwhile effect on car dependence. It is apparent that in nearly all world urban areas the public transport share is decreasing. Table 1 shows that the public transport journey share in Copenhagen, Stockholm and Vienna, frequently mentioned as cities to imitate, are in a similar range to that of

Sydney and are decreasing over time.

The proponents of high-density may be confusing the pre-automobile structure of European cities with that of today. The present central portions of European cities were built when transport options were almost exclusively limited to walking and this limitation is reflected by their high-density structure.

The public transport share in Paris is merely 24.1 per cent and decreasing. Yet Paris has high-density living, no freeways and one of the world's most intensive rail transit systems. Further, the central city of Paris exhibits severe congestion; the average vehicle speed is only 20 km per hour. It has more congested streets than Los Angeles.¹⁹ Post WW2 high-rise built around Paris is as dense as in any city anywhere but these areas are notorious for poor public transport use and high car usage. *Paris is no longer a walking city!*

The walking city of previous centuries was concentrated because *it had to be*. It cannot be replicated in the automobile city because, except under dictatorial regimes or other extreme circumstances *it does not have to be*.

Only when densities approach that of Hong Kong does the proportion of public transport journeys become really substantial (80 per cent). *Ultra high-density*, at 50,000 people per sq km, the highest in the world, results in such severe traffic congestion that travelling by car is not an option for most people. To attain this overall density, all of Melbourne would have to be concentrated into an area of radius five km around Flinders Street Station or all of Sydney within five km of Central Station. Even if this were feasible, the Australian public simply would not accept such living conditions and none of the high-density proponents are proposing strategies that would produce the required radical increases in density.

In between Australian cities and Hong Kong lies a situation where neither public nor private transport can work effectively. The high-density advocates are taking Australian cities to this situation.

PUBLIC TRANSPORT'S FUNDAMENTAL PROBLEM

A basic physical restriction exists with current public transport systems, evident on any public transport diagram. Public transport travels linearly whereas cities are two-dimensional.

Consider the points of origin and destination in a city as being depicted in a two dimensional matrix: a linear public transport system cannot reach all these points, whereas a car can. This limitation is even more noticeable when time is also taken into consideration. The inclusion of time requires a three-dimensional matrix, with two spatial dimensions and one of time. Public transport only runs at certain times, further limiting the proportion of points within its reach. Car travel is less time-constrained.

In most instances the number of the three-dimensional area-time points that can be connected by public transport is very much less than those that can be reconnected by car. Unlike public transport, a car takes one and one's accompanying articles where one wants to go when one wants to go. We cannot return to previous eras. Yesterday cannot be imposed on today.

ACTIVITY CENTRES PROPOSED FOR AUSTRALIAN CAPITAL CITIES

A Victorian State Plan (the Melbourne 2030 Plan) intends to promote higher density of housing and jobs in designated areas in Melbourne. There will be a hierarchy of centres which are envisaged to house about half of the additional population of Melbourne, provide jobs and

access to services for people within their centre and create a village atmosphere. The planners assume that this will result in a change in travel behaviour.²⁰

Since 1997 the NSW Planning Department has been forcing local authorities in Sydney to accept higher densities, irrespective of the desires and aspirations of local communities.²¹ A subsequent Metropolitan Strategy Discussion Paper issued in New South Wales in 2004 envisages a centres policy as the strategy cornerstone. Seven centres in Sydney's West, four regional centres and four corridors for renewal are proposed. Issues identified include: 'sustainability', accommodating population growth, providing a wider range of housing, providing employment, managing natural resources wisely, improving transport and linking with regions. Otherwise the document is vague. A subsequent announcement specified that 60 per cent to 70 per cent of future population growth is to be housed within current urban areas, with the balance in new greenfield sites. The Department has claimed that the high-density Pyrmont precinct is an ideal example of the vision for Sydney's future, and maintains that many people walk to work and like living there.²² But Pyrmont is close enough to the city to walk to (one km) and it is impractical to use one's car in the congested conditions. The effect on families will be discussed below. Pyrmont cannot be considered as a typical model for an activity centre.

PRACTICABILITY OF ACTIVITY CENTRES

The activity centre proposals for Australian cities appear to be based on Newman and Kenworthy's suggestion for compacting existing Australian cities, using high density urban villages.²³ Bamford comments, 'It would be no

small thing to build a compact city from scratch in Australia, or even to infill and expand all of our existing cities along urban consolidation or compact city lines. But it would be quite another to rebuild all of our large low density cities as compact versions of their European counterparts'.²⁴ As described above, the European examples are generally in the core, not the suburbs.

Newman claims the Subiaco centre, three km from the Perth central business district, is being seen as a model of how to build a 'Transit City' centre.²⁵ However he provides no evidence to show that such centres reduce a city's overall car dependence to any significant extent.

Birrell et al. point out that, in the case of the Melbourne 2030 plan, while the illustrations portray an attractive image, there is no explanation regarding how the benefits envisaged can be achieved. They question whether, contrary to previous trends, workers will wish to live close to their place of work. Difficulties and incompatibilities of co-locating housing with other activities such as offices and retail in activity centres are likely. They refer to reports that show that urban structures (that is the distribution of centres) within a metropolitan area are not a major influence on the pattern of travel. Car use in Melbourne is affected by patterns of job location. Most jobs are situated in dispersed locations and are unlikely to move to activity centres. They conclude that car use and travel behaviour will be little affected by the Centres Policy.²⁶

Similarly the NSW Planning Department gives no indication of how its centres policy objectives will be achieved. In reply to a letter in the press by the author requesting an example of a successful application, a NSW government spokesperson pointed out

that Arlington, near Washington DC, is an example of how Sydney should be developed.²⁷ However Arlington has only 187,000 residents compared to Sydney's 4,000,000 residents. It is a satellite city of Washington DC and was developed by the market decades ago, not by planners in recent years. Even with the addition of a metro and what might be called a high density transit oriented urban village at Ballston there has been little improvement in transit's share.²⁸

What might work as a satellite city, with built-in time and distance barriers to the core city, cannot be assumed to be applicable to centres placed within the mother city itself. A great city evolves as a result of the large diversified pool of labour, jobs and facilities it provides. It develops multiple attractors such as distinctive work opportunities, specialist supplies, schools of choice, universities, unique sports, entertainment and friends to visit. Only a tiny fraction of this variety can be located within the envisaged centres. As it is, current city layouts locate a certain proportion of destinations such as local shops and child-care facilities close to residential precincts and it is not clear how high-density centres will make much difference.

Transport and other networks have evolved in cities over time. It is difficult to believe that superimposed centres will be able to alter these long-established communication networks in the manner envisaged for Australian capital cities. Before it can be assumed that a centres policy will appreciably ease transport problems, it is essential that reasonably accurate predictions can be made that a significantly increased proportion of car journeys will be limited to the centre and that car km per capita will be reduced to a justifiable extent.

SUSTAINABILITY

State planning departments frequently claim that the replacement of single-residential by high-density housing will be more 'sustainable'. However it is doubtful whether the environmental gains will be significant.

Considerable energy is needed to produce a dwelling and this energy, embodied in its structure, can be viewed as amortised over the life of the building. If a viable home is razed to make way for new units the energy embodied in that home is lost over the period of its otherwise remaining life — probably in the order of 20 Gjoules per capita per annum.²⁹ This is a significant amount of energy.

Additionally, in warm climates, considerable operational energy is needed for high-rises. The demand for air-conditioning is increased as windows are frequently kept closed due to the more intimate living and they mostly cannot be shaded by eaves or trees. There is also increased electricity demand from lifts, clothes driers and lighting for basement car-parks and common areas.

High-density imposition removes most of the trees prevalent in a low-density community. Trees cool a city. Cities are heat islands and the increased proportion of hard surface resulting from high-density exacerbates this. Temperatures can be 3 to 4° more than they otherwise would be five hours after sunset. In California one tree is viewed as the equivalent of five room air conditioners running 20 hours a day.³⁰ Trees absorb carbon dioxide and together with uncovered soil bacteria remove atmospheric pollutants.

Increased densities are likely to cause more polluted stormwater and more of it discharging into urban creeks and waterways causing significant degradation. As

urban density increases so does pollution in creeks. This was noted by water testing programs involving schools in Sydney.³¹

Densification destroys heritage. Residents in Camberwell in Melbourne and in many locations in Sydney have rallied against proposals for high-density dwellings to replace heritage and urban conservation areas.

As has been mentioned above, congestion increases with high-density. This congestion produces a serious problem. Vehicle exhausts contain dangerous microparticles. Ballpark estimates from data published by the United States Environment Protection Agency indicate that several times as many people die from exposure to this pollution as do from car accidents.³²

COST

High-density proponents have persuaded politicians that infrastructure costs are saved by densification. They argue that the more dwellings attached to the power line and the sewer line, the less the infrastructure cost per dwelling. While this assertion is reasonable when applied to opening up new areas (provided the public can be persuaded to accept the higher density), whether it applies to existing suburbs is less straightforward.

Storm water systems, the water supply and the power supply of cities subject to urban densification are under increasing stress. The infrastructure of suburbs was designed for the density of dwellings then built. Retrofitting higher density must overload this infrastructure. It is likely to be more cost-effective to provide new infrastructure in unobstructed situations than to upgrade existing infrastructure given the physical obstacles, legal constraints and problems involved in linking up with outdated installations.

In Sydney, it is becoming apparent

that the high-density policy merely postpones expenditure. The effect on streets not designed for the volume of traffic resulting from densification is significant.³³ Apart from the detrimental effect on residents, costly upgrading of road surfaces and traffic management changes are frequently necessitated. Failures are increasingly evident in sewer systems. Following considerable high-rise development, urgent action had to be taken in the city of Willoughby in Sydney to prevent recurring sewer overflows. An upgrade costing in excess of \$10 million had to be installed using highly specialised directional drilling techniques. Overloading infrastructure may postpone expenditure but the ultimate cost is likely to be higher.

HOUSING CHOICE

State Planning Departments maintain that urban densification will 'increase housing choice'. No evidence for the need of further choice is supplied. They maintain that local government areas should be transformed until all housing styles are available in all municipalities and that people should be able to move to a different housing style in the same locality. But, apart from overall shortages apparently resulting from land shortages mentioned above, there is no proof that there currently is an insufficient range of housing choice for residents. A 1999 study by the Planning Institute of Sydney University shows no evidence of shortages of any particular accommodation type in Sydney³⁴ and there is no evidence to indicate that the overall situation has changed. If such a shortage does occur in any particular local area, there are already mechanisms for the community through local government to effect desired changes to local zoning. Why do state governments need to become involved?

Indeed, if all local government areas have to include all types of housing in certain proportions, diversity and heritage will be impacted and choice will be reduced rather than increased.

Hall describes a plan in Stockholm commenced in the 1950s to establish high-density residential and employment centres like beads on a string stretching into the countryside with 10,000 to 15,000 inhabitants around transport nodes. Eventually those residents in the medium- and high-rise rental apartments who could afford to moved out. They have been replaced by migrants and social welfare recipients. Hall attributes the collapse of the scheme to the centres not delivering the planned relationship of homes to jobs as well as to the fact that, once Swedes were offered the choice, they mostly wanted to be owner occupiers. Surveys in the late 1970s reaffirmed the fact that 90 per cent of Swedes preferred single family homes.³⁵

A Sydney study also shows that new multi-unit development is occupied mainly by immigrants who have not previously experienced anything else. Australians in general do not move from single-unit to multi-unit accommodation.³⁶ An analysis of social trends during the past two decades shows that 83 per cent of Australians express their housing preference by living in a free standing home.³⁷ To own their own free-standing home has been a major goal of most families, notably those of low income, and living in one's own house is viewed as an important part of the Australian way of life.

Families with children are already finding housing choice increasingly limited. Most residents of Pymont, mentioned earlier, are renters (73.6 per cent vs the State average of 30 per cent), many of them students or overseas visitors.

There are few families with children.³⁸ Data from the Census show that in the inner suburban ring of Sydney the proportion of homes with children is only 30 per cent compared to the outer ring where the proportion is about 55 per cent. This mirrors the housing choices presented in these localities. Separate dwellings represent only 28 per cent of homes in the inner ring and 82 per cent in the outer ring. Densification thus is already restricting housing choice for families with children.³⁹ They are increasingly limited to selecting either an inner city unit or an outer area house. In time, forcing more and more of these families to live in confined group housing is likely to be bitterly resented.

Similarly the 2001 Census indicates that 48 per cent of the dwellings in Subiaco in Western Australia (the centre of which now is a medium-density development) are separate houses compared to 76 per cent in the overall Perth statistical division. Two-person families with children comprise only 36 per cent of this population compared to 47 per cent in Perth as a whole. In fact, the boom in unit construction in Melbourne in the 1990s was fueled by younger people, predominantly 20-29 year olds.⁴⁰

Portland, Oregon, in the United States has been the model of urban densification for new urbanists. Nonetheless, the core city experienced a drop of 10,000 students in the last decade. Portland officials called in March for the closing of six schools, 'prompting cries of grief from three generations of adults who say that nothing takes the heart out of a neighborhood like a shuttered school'.⁴¹

SOCIAL NETWORKS

Putnam proclaims that 'suburbanisation, commuting and sprawl' have contributed to the decline in social engage-

ment and social capital.⁴² This has led proponents of high-density to maintain that high-density enhances the involvement of people in community activities. Referring to Putnam, in the opening speech at a conference on sustainability, the then NSW Minister of Planning and Urban Affairs, Andrew Refshuage, alleged that 'sprawl' causes people to become socially disconnected whereas urban densification will lead to social sustainability with improved 'liveability' and quality of life.⁴³ However it is not clear how Putnam or his followers arrive at this conclusion. Charts in Putnam's book show people's community involvement in the more spacious small towns is twice that in dense large cities.⁴⁴ They also show that such community involvement is greater in low-density suburbs than among people living in denser central city areas. This is especially true for the larger centres. The data depicted therefore show, contrary to what is claimed, that as density increases, people's involvement in community activities declines. (See **Figure 2**, which aggregates Putnam's portrayal.)

ALTERNATIVES TO URBAN DENSIFICATION

If high-density living is the best the new urbanists and smart growth advocates can offer, efforts should be made to start thinking outside the square within which current planners' ideas appear to be boxed. Before asking how we might cope with an increasing population the whole basis of policies that impose population growth pressures should be questioned. If policy makers decide that Australia's population has to increase, a continuum of possibilities exists, from spreading people evenly across the country to concentrating them in one location.

DECENTRALISATION

One broad possibility is decentralisation. Attempts could be made to stimulate development more equitably over the whole country by enticing people to more remote locations. The additional fraction of Australia's vast land surface that would be taken up by decentralisation compared to a policy of increasing existing urban densities would be insignificant. McLoughlin shows that the urban densification alternative will have a negligible effect on the resulting proportion of non-urban land.⁴⁵

The Save Our Suburbs community movement in New South Wales suggests that balanced development can be accomplished by a combination of decentralisation strategies. To cater for a portion of additional population, new satellite cities could be developed sufficiently close to the capital cities to be able to use facilities that would not be viable if developed locally but far enough to inhibit less important travel. These satellite cities should incorporate desirable features such as green belts, underground electrical cabling, energy-efficient buildings, drought-resistant plants and water reuse downstream. They should be of optimal size (with about 200,000 residents each). They should have street layouts designed to maximise access by walking, cycling and public transport. They should be linked to the capital city and each other by very fast transport and communication facilities. This approach is likely to provide a better chance of success for new urbanist designs than the current policy of retrofitting high-density onto existing communities intended for lower population densities.

Central to all planning should be the goal of eliminating unnecessary travel by making the communities as self-sufficient as possible. This requires that strenuous

efforts be made to locate work, education, health, entertainment, shopping, sporting and recreational facilities within easy reach of the residential precincts.

Ideally satellite cities should be sited so as to minimise overall communication cost. Locations could be points on a circle surrounding the core city or points on radial lines from the core. Positioning should only be decided after careful study involving all significant parameters.

The terrain in the vicinity of Melbourne possibly allows an arrangement 'like beads on a string' as Melbourne's frontier can be extended in this way towards the Latrobe Valley. Mountain ranges, river valleys and national parks restrict potential locations around Sydney, but possibly the area southwest of the city in the direction of Goulburn and Canberra is the most promising. The challenge relating to efficient water use would have to be met.

Additionally there should also be a policy of repopulating declining regions. In this regard, lessons could be learnt from the Whitlam Government's decentralisation attempt which had many flaws and ended after a change of government.

The Commonwealth Government must take some responsibility for new arrivals that result from its policies. It cannot just assume, as it does now, that the States can forever shoehorn immigrants into existing communities. The Commonwealth should provide funds to cater for the necessary infrastructure and employment required to promote acceptable decentralised development across the nation. It should also provide workable incentives such as income tax concessions for those who set up a business or work in these areas.

CONCLUSION

Future generations should have access to

the same high quality of life and choices that have been available to present generations. This requires planning decisions be rationally made, preferably on a long-term cost-benefit basis.

Quantitative prediction is noticeably absent from the new urbanist and smart growth planning policies being implemented. If the process being undertaken by planners is to be credible, it is essential that an acceptable decision-making methodology be adopted.

At the very least it is necessary that sustainability and other objectives be defined and performance indicators set. Broad possibilities should be stated and various development models proposed, each backed by a fact-supported benefit/cost analysis. Full social cost accounting should be undertaken with external costs included.⁴⁶

Before policy decisions are finally made, studies should be undertaken by autonomous bodies with input from respected engineers, economists, planners and community representatives who are independent of government patronage or other outside influences.

The far-reaching and inflexible effects of the implementation of planning decisions require the decision-making process to be soundly based and to be seen as soundly based. It is essential that the process be publicly accepted as objective, transparent, uninfluenced by vested interests and motivated by overall long-term community benefit. To this end, political donations by developers must be outlawed.

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- ⁴⁴ Putnam, op. cit., pp 206-7.
- ⁴⁵ J. McLoughlin, 'Urban consolidation and urban sprawl: a question of density', *Urban Policy and Research*, vol. 9, no. 1, 1991, pp. 85-9
- ⁴⁶ J. Black, A. Paetz, P. Suthanaya, 'Sustainable urban transportation: performance indicators and some analytical approaches', *Journal of Urban Planning and Development*, December 2002; Procedures for Recommending Optimal Sustainable Planning of European City Transport Systems, Institute for Transport Planning and Traffic Engineering, Vienna University of Technology, Gusshausstrasse 30/2, A-1040 Vienna, Austria, <http://www-ivv.tuwien.ac.at/projects/prospects.html>

Table 1: **Density and Car Dependence
Selected Urban Areas**

Urban Area	Density /sq km (2)	Public Transport		Car km/capita (3)
		Market Share (1)	Trend per Decade (1) and (4)	
Adelaide	1176	4.90%	-15.5%	6690
Brisbane	979	5.30%	-7.8%	6467
Canberra	967	5.50%	5.8%	*
Copenhagen	1869	17.40%	-11.4%	4558
Frankfurt	2296	14.20%	-40.2%	5893
Hamburg	2323	14.80%	-24.0%	5061
Hong Kong	49581	73.00%	-6.2%	493
Melbourne	1577	7.60%	4.7%	6436
Paris	3545	24.10%	-17.2%	3459
Perth	1063	4.50%	-5.4%	7203
Portland	1289	2.00%	-4.3%	*
Singapore	9593	40.10%	-15.3%	1864
Stockholm	3614	20.70%	-12.8%	4638
Sydney	2105	12.30%	-10.6%	5885
Tokyo	5934	56.60%	-11.6%	2103
Toronto	2643	15.20%	-40.9%	5019
Vienna	3592	24.80%	-11.6%	3964
Zurich	3642	24.00%	2.3%	5197

(1) www.publicpurpose.com --- Wendell Cox Consultancy; Public Transport Market Share Trends: International Urban Areas from 1980, 2003

(2) www.demographia.com --- Wendell Cox Consultancy; International Urbanised Area Data: Population, Area and Density, 2001 as revised

(3) Newman P and Kenworthy J, Sustainability and Cities, Island Press, Washington, 1999

(4) For Sydney public transport market share: 2002 Household Travel Survey Summary Report 2004 Release, Transport and Population Data Centre, NSW Department of Infrastructure, Planning and Natural Resources, page 27 using the more recent data provided from 1991 to 2002.

* Not available at date of comparison (1990)

Figure 1

Urban Density and Congestion

Sources: Road Facts, Ausroads, Sydney 2000; Sustainability & Cities, Newman and Kenworthy, Island Press, Washington 1999

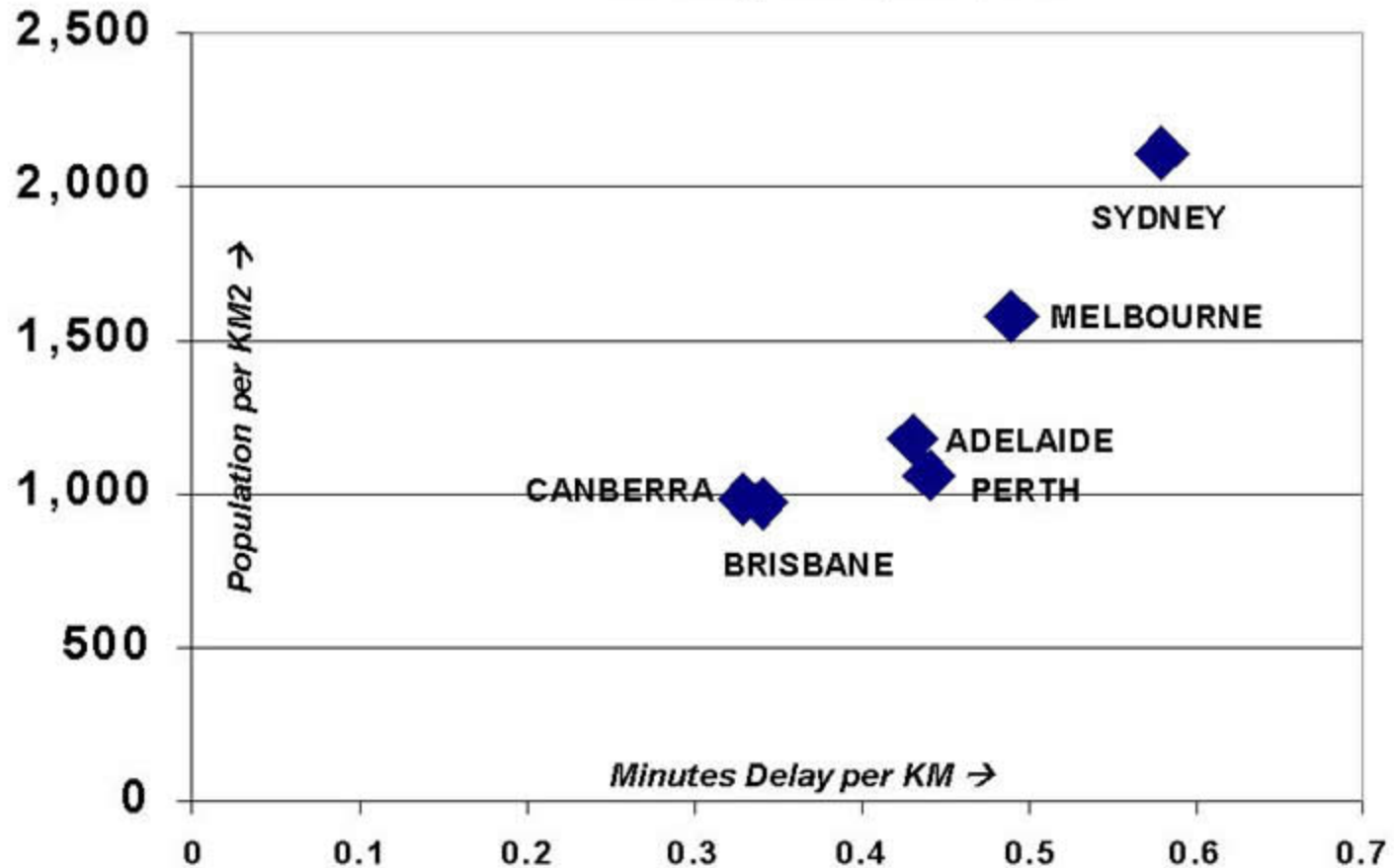


Figure 2 Community Activity Involvement

INVOLVEMENT IN COMMUNITY ACTIVITIES

Percentage of Community Involvement

Central City and Suburb		
Population	Central	Suburb
10,000 to 50,000	17.59638	16.91004673
50,000 to 250,000	15.76373	17.1728972
250,000 to 1 million	14.44217	15.99007009
1 million and over	8.192173	12.85776869

Data Source: Deduced from Putnam R D, *Bowling Alone*, Simon & Schuster, New York, 2000

